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# SOUTHWESTERN WILLOW FLYCATCHER MANAGEMENT PLAN

(Taos Resource Area)

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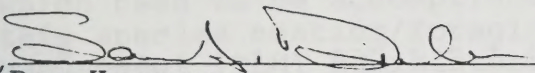


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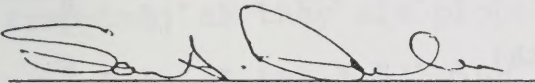


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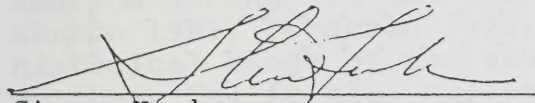


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INTRODUCTION . . . . .	1
LIFE HISTORY . . . . .	1
ENVIRONMENTAL BASELINE (RANGE-WIDE) . . . . .	4
Reasons for listing . . . . .	4
Rangewide trend . . . . .	4
New Mexico . . . . .	5
Arizona . . . . .	5
California . . . . .	6
Continued threats . . . . .	6
Sensitivity to impacts . . . . .	7
Recovery rate . . . . .	8
ENVIRONMENTAL BASELINE (TAOS RESOURCE AREA) . . . . .	8
Historical Information . . . . .	8
Current Surveys/Monitoring Efforts . . . . .	9
Riparian Habitat . . . . .	9
MANAGEMENT PLAN (BIOLOGICAL OPINION) REQUIREMENTS . . . . .	12
Riparian Habitat Mapping . . . . .	12
Survey Prioritization . . . . .	12
Monitoring . . . . .	12
Management Guidelines . . . . .	12
MANAGEMENT PLAN (BIOLOGICAL OPINION) IMPLEMENTATION . . . . .	12
Riparian Habitat Mapping . . . . .	12
Survey Prioritization . . . . .	13
Monitoring . . . . .	13
Management Guidelines . . . . .	14
Summary . . . . .	15
LITERATURE CITED . . . . .	17



## INTRODUCTION

This management plan describes the background and history of the Southwestern willow flycatcher and outlines the various tasks which need to be accomplished to protect, improve, or reestablish this species nesting/foraging habitat on Bureau of Land Management (BLM) administered lands within the Taos Resource Area. All of proposed tasks as outlined in this management plan are in conformance with the Taos Resource Management Plan (RMP).

An Environmental Assessment (EA) which identifies and analyzes the potential affects of this action accompanies this document. In addition, site specific EA's would be prepared for each individual project (i.e., fencing, planting, cowbird trapping) as they are proposed in the future.

Much of the following information on the background and life history of this species was compiled by Marshall (1996). The southwestern willow flycatcher (Empidonax traillii extimus) is one of five currently-recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993). It is a neotropical migratory species that breeds in the southwestern U.S. and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948, Stiles and Skutch 1989, Peterson 1990, Howell and Webb 1995). The historical range of the southwestern willow flycatcher included southern California, Arizona, New Mexico, western Texas, southwestern Colorado, southern Utah, extreme southern Nevada, and extreme Northwestern Mexico (Sonora and Baja) (Unitt 1987).

## LIFE HISTORY

The southwestern willow flycatcher is a small passerine bird (Order Passeriformes; Family Tyrannidae) approximately 5.75 inches long. It has a grayish-green back and wings, whitish throat, light gray-olive breast, and pale yellowish belly. Two whitish or buff wingbars are visible; the eye ring is faint or absent. The upper mandible is dark, the lower is light, grading to dark at the tip. The flycatcher is an insectivore, foraging within and above dense riparian vegetation, taking insects on the wing or gleaning them from foliage (Wheelock 1912, Bent 1960). No information is available on specific prey species.

The southwestern willow flycatcher is a riparian obligate, nesting in riparian thickets associated with rivers, streams, and other wetlands where dense growth of willow (Salix sp.), seepwillow (Baccharis), buttonbush (Cephalanthus sp.), boxelder (Acer negundo), tamarisk or saltcedar (Tamarix sp.) or other plants are present, often with a scattered overstory of cottonwood (Populus sp.) and/or willow.



Surface water or saturated soils are usually present or nearby, especially early in the breeding season. During drier years, surface water may be present early in the breeding season, with only damp soil present or a total lack of soil moisture by late June or early July (Muiznieks et al. 1994, Sferra et al. 1995). The plant species composition and structure of nesting habitat varies across the bird's range. This variation ranges from relatively homogeneous patches of one or several shrub or tree species that form a single cover layer up to approximately 6 m in height (20 ft) to structurally heterogeneous patches of many tree and shrub species with distinct overstory, sub-canopy, and ground cover levels (Brown 1988, Whitfield 1990, Sedgwick and Knopf 1992, Muiznieks et al. 1994, Tibbitts et al. 1994, Maynard 1995, Sferra et al. 1995, Whitfield and Strong 1995). Within this range, unifying characteristics of nesting habitat include high percent canopy cover (> 85 percent) and high vertical foliage density from ground to canopy (Whitfield 1990, Spencer et al. 1996).

The southwestern willow flycatcher begins arriving on breeding grounds in late April and May (Sogge and Tibbitts 1992, Sogge et al. 1993, Sogge and Tibbitts 1994, Muiznieks et al. 1994, Maynard 1995, Sferra et al. 1995). Migration routes are not completely known. However, willow flycatchers are known to migrate through the major drainages in New Mexico. These migrating birds include other subspecies of Empidonax traillii. Flycatchers of the genus Empidonax rarely sing during fall migration, so that a means of distinguishing some migrating Empidonax species without a specimen is not feasible (Blake 1953, Peterson and Chalif 1973). However, willow flycatchers have been reported to sing and defend winter territories in Mexico and Central America (Gorski 1969, McCabe 1991).

Southwestern willow flycatchers begin nesting in late May and early June and fledge young from late June through mid-August (Willard 1912, Ligon 1961, Hubbard 1987, Brown 1988, Whitfield 1990, Sogge and Tibbitts 1992, Sogge et al. 1993, Muiznieks et al. 1994, Whitfield 1994, Maynard 1995). Southwestern willow flycatchers typically lay three to four eggs in a clutch (range = 2-5). The breeding cycle, from laying of the first egg to fledging, is approximately 28 days. Eggs are laid at 1-day intervals (Bent 1960, Walkinshaw 1966, McCabe 1991); they are incubated by the female for approximately 12 days; and young fledge approximately 12 to 13 days after hatching (King 1955, Harrison 1979). Southwestern willow flycatchers typically raise one brood per year but have been documented raising two broods during one season (Whitfield 1990). Southwestern willow flycatchers have also been documented reneesting after nest failure (Whitfield 1990, Sogge and Tibbitts 1992, Sogge et al. 1993, Sogge and Tibbitts 1994, Muiznieks et al. 1994, Whitfield 1994, Whitfield and Strong 1995).



Whitfield, who has accumulated the largest data set on E. t. extimus, reported the following data on survivorship of adults and young: of 58 nestlings banded since 1993, 21 (36 percent) returned to breed; of 57 birds banded as adults (after hatch year) since 1989, 18 (31 percent) returned to breed at least 1 year (10 males, 8 females), five (9 percent) returned to breed for 2 years (all males), and two (3.5 percent) returned to breed for 3 years (M. Whitfield, Kern River Preserve, pers. comm. with R. Marshall). Whitfield and Strong (1995) also documented statistically significant variation in return rates of juveniles as a function of fledging date: approximately 21.9 percent of juveniles fledged on or before July 20 returned to her study area the following year, whereas only 6.4 percent of juveniles fledged after July 20 returned the following year.

Walkinshaw (1966), who studied E. t. traillii in Michigan, estimated that 40.9 percent of the males at his study site returned to breed for at least 2 years, 22.7 percent returned for at least 3 years, 13.6 percent returned for at least 4 years, and at least 4.5 percent returned during their fifth year. Female return rates were substantially lower. Only 22.6 percent returned to breed for 1 year. These data are consistent with survival rates for other passerines (Gill 1990) and suggest that the life span of most E. t. extimus is probably 2 to 3 years.

Brood parasitism of southwestern willow flycatcher nests by the brown-headed cowbird (Molothrus ater) has been documented throughout the flycatcher's range (Brown 1988, Whitfield 1990, Muiznieks et al. 1994, Whitfield 1994, Hull and Parker 1995, Maynard 1995, Sferra et al. 1995, Sogge 1995a). Cowbirds lay their eggs in the nests of other species, directly affecting their hosts by reducing nest success. Cowbird parasitism reduces host nest success in several ways. Cowbirds may remove some of the host's eggs, reducing overall fecundity. Hosts may abandon parasitized nests and attempt to reneest, which can result in reduced clutch sizes, delayed fledging, and reduced overall nesting success and fledgling survivorship (Whitfield 1994, Whitfield and Strong 1995). Cowbird eggs, which require a shorter incubation period than those of many passerine hosts, hatch earlier, giving cowbird nestlings a competitive advantage over the host's young for parental care (Bent 1960, McGeen 1972, Mayfield 1977, Brittingham and Temple 1983). Where studied, high rates of cowbird parasitism have coincided with southwestern willow flycatcher population declines (Whitfield 1994, Sogge 1995b, Sogge 1995c, Whitfield and Strong 1995), or, at a minimum, resulted in reduced or complete elimination of nesting success (Muiznieks et al. 1994, Whitfield 1994, Maynard 1995, Sferra et al. 1995, Sogge 1995a, Sogge 1995c, Whitfield and Strong 1995, Henry et al. 1996). Whitfield and Strong (1995) found that flycatcher nestlings fledged after July 20 had a significantly lower rate of survival, and that cowbird parasitism was often the cause of delayed fledging.



## ENVIRONMENTAL BASELINE (RANGE-WIDE)

### Reasons for listing

The southwestern willow flycatcher was listed as endangered in response to documented declines in population size and extent of historic range occupied resulting from loss, modification, and fragmentation of riparian habitat and parasitism by the brown-headed cowbird (U.S. Fish and Wildlife Service (USFWS) 1993, USFWS 1995). The USFWS included the flycatcher on its Animal Notice of Review as a category 2 candidate species on January 6, 1989 (USFWS 1989). The southwestern willow flycatcher was proposed for listing as endangered, with critical habitat, on July 23, 1993 (USFWS 1993). A final rule listing the southwestern willow flycatcher as endangered was published on February 27, 1995 (USFWS 1995), and became effective on March 29, 1995.

The states of California and New Mexico also list the southwestern willow flycatcher as endangered (California Department of Fish and Game 1992, New Mexico Department of Game and Fish 1988). The State of Arizona considers the southwestern willow flycatcher a species of special concern (Arizona Game and Fish Department 1996).

A final rule establishing Critical Habitat was published on July 22, 1997 (Federal Register Vol. 62 #140) and became effective on August 21, 1997. There is no Critical Habitat identified within the Taos Resource Area.

### Rangewide trend

Southwestern willow flycatcher populations are extremely small and vulnerable to extirpation; greater than 75 percent of existing flycatcher locations are occupied by an estimated 5 or fewer territorial males. The Service believes that the viability of many of the local breeding groups is questionable, and that at current population levels, and with continuing threats, extinction of this species is foreseeable. Southwestern willow flycatchers are absent from many areas previously occupied or are present in reduced numbers (Hubbard 1987, Unitt 1987, Sogge et al. 1993, Sogge and Tibbitts 1994, Muiznieks et al. 1994, Sferra et al. 1995).

Recent surveys have documented breeding populations of southwestern willow flycatchers in three states (California, Arizona, and New Mexico). A small number of territorial males ( $\leq 5$ ) has been documented in both southern Utah and southwestern Colorado during 1993 and 1994 surveys. However, breeding of confirmed E. t. extimus has not been verified in those states (Sogge 1995b, K. McDonald, Utah Division of Natural Resources, pers. comm., T. Ireland, USFWS, Colorado, in litt.).



Extensive survey efforts since 1993, particularly in New Mexico and Arizona, have verified breeding status, or the lack thereof, at historic flycatcher locations (Muiznieks et al. 1995, Maynard 1995, Sferra et al. 1995, Spencer et al. 1996). These surveys have also documented flycatchers at locations where historic data were not collected. Intensive, long-term, standardized monitoring efforts have documented declines in flycatcher populations. Some populations appear to have stabilized after cowbird control efforts were implemented.

Current estimates for total numbers of remaining southwestern willow flycatchers are 500 or fewer territories rangewide (Unitt 1987, USFWS 1995). Combining survey data collected throughout the flycatchers' range since 1990 (including unverified sightings in Utah and Colorado), the Service has documented approximately 420 flycatcher territories on 32 drainages. More than 75 percent of known occupied sites are comprised of an estimated five or fewer flycatcher territories, and many sites consist of single, unmated males. Currently, only five sites rangewide are known to be comprised of more than 20 territories: South Fork Kern River (Kern Co., CA), upper San Luis Rey River (San Diego Co., CA), Roosevelt Lake (Maricopa Co., AZ), San Pedro River (Pinal Co., AZ), and the largest known flycatcher site, Gila River (Grant Co., NM), which is comprised of an estimated 135 territories.

#### New Mexico

Statewide surveys in New Mexico have documented approximately 135-170 territories on eight drainages (Parker and Hull 1994, Maynard 1995, Cooper 1996, Skaggs 1996). Small groups of one to seven willow flycatcher territories have been detected on the Rio Grande, Chama, Zuni, San Francisco, and Gila rivers, and on Bluewater Creek (Maynard 1995, Ahlers and White 1995, Henry et al. 1996, Cooper 1996, Skaggs 1996).

In 1993, there were an estimated 29 flycatcher territories, with 7 pairs and 14 males, 5 nests, and 7 fledglings. Survey efforts increased in 1994, and approximately 149 territories were observed, with 25 confirmed and 6 suspected pairs, 8 males, and 2 birds of undetermined sex. There were 18 nests, 1 inferred nest, and 3 failed nests; the 18 nests produced 33-34 eggs and 13 confirmed or suspected fledges (Maynard 1995). In 1995, there were approximately 170 territories (the Cliff/Gila area had approximately 135 territories) in New Mexico, with approximately 71 nests, and 19 observed or suspected fledglings (Cooper 1996, Skaggs 1996).

#### Arizona

Statewide surveys in Arizona from 1993 to 1995 documented southwestern willow flycatchers at approximately 21 of over 400



sites surveyed (Muiznieks et al. 1994, Sferra et al. 1995, Spencer et al. 1996). Sferra et al. (1995) estimated a total of 119 territorial males on 11 drainages in Arizona.

The number of territorial males monitored on the Colorado River in the Grand Canyon has declined since monitoring began in 1984 (Sogge 1995c). Since 1992, 9 known pairs of willow flycatchers have made 13 nesting attempts in the Grand Canyon, 1 of which successfully fledged 3 flycatchers.

Similar population changes and nest success have been observed in the Verde Valley at Clarkdale, Arizona, where four territorial males were first observed in 1992. Data from 1995 indicate that two unpaired males occupied the Clarkdale site (Sogge 1995b); however, extensive monitoring efforts were not possible due to landowner restrictions on access to the site.

Elsewhere in Arizona, population loss or undetected dispersal of small breeding groups have been documented since 1993. In 1993, surveys estimated five territorial males at Dudleyville Crossing on the San Pedro River (Pinal Co.). Surveys done in 1994 and 1995 failed to detect any flycatchers at that location (Muiznieks et al. 1994, Sferra et al. 1995, Spencer et al. 1996). At other locations, such as Cook's Lake and PZ Ranch on the San Pedro River, the number of flycatchers appears to have remained stable over the last several years (Muiznieks et al. 1994, Sferra et al. 1995, Spencer et al. 1996).

## California

In California, approximately 127 territories have been found on five drainages (Whitfield 1994, Whitfield and Strong 1995, Holmgren in litt.). Along the Kern River, Whitfield (1993) documented a precipitous decline in the total flycatcher population (44 to 27 pairs) from 1989 to 1993. During that same period, cowbird parasitism rates between 50 and 80 percent were also documented (Whitfield 1993). A cowbird trapping program initiated in 1992 has reduced cowbird parasitism rates to less than 10 percent. Flycatcher population numbers appear to have stabilized at 32 to 34 pairs in 1993, 1994, and 1995 (Whitfield 1994, Whitfield and Strong 1995).

## Continued threats

Additional habitat losses will likely include both small- and large-scale losses and be of the same types as known to date (i.e., habitat loss, fragmentation, and modification). The Service expects incidence of cowbird parasitism will vary spatially and temporally as a function of local cowbird population dynamics and local changes in the extent of riparian habitats. In addition to habitat loss, modification, and fragmentation, and cowbird parasitism, the small size of



flycatcher populations leaves them extremely vulnerable to environmental stochasticity (e.g., extreme weather events, fire, disease), demographic stochasticity (e.g., shifts in birth/death rates and sex ratios), and possibly inbreeding depression.

Synthesizing recent empirical and theoretical studies on population genetics, Lande (1995) suggested that the number 500, long held by some in the conservation biology community to represent the minimum effective population size necessary to maintain a viable population of any species, is far too small. Lande contended that effective population sizes should be much larger in order for a species to maintain normal levels of potentially adaptive genetic variance to counteract the effects of random genetic drift. Lande concluded that, because recovery goals for listed species are often not much higher than the actual population size at the time of listing, maintenance of adequate evolutionary potential and long-term genetic viability was doubtful unless populations were recovered to much larger sizes.

Effective population size takes into account the actual individuals that are breeding and how many offspring they are contributing to the next generation. The effective population size for a species may be much smaller than the censused population size because of uneven sex ratios, uneven breeding success among females, and low population numbers, which exacerbate the above factors. The total number of known southwestern willow flycatcher territories is approximately 420. The Service estimates that as many as 500 territories may exist rangewide. However, many locations with flycatchers consist of few pairs or single, unmated males. Thus, based on flycatcher census data and Lande's hypothesis, the effective population size for the southwestern willow flycatcher is probably critically low.

### Sensitivity to impacts

The southwestern willow flycatcher's sensitivity to changes in habitat is high as a result of the small sizes of nesting groups, the small sizes of riparian habitats occupied, and the highly fragmented distribution of habitats. The extent of riparian habitat, its distribution, continuity, and species composition, has been substantially altered in the southwest (Phillips et al. 1964, Carothers et al. 1974, Rea 1983, Johnson and Haight 1984, Katibah 1984, Johnson et al. 1987, Franzreb 1987, Unitt 1987, General Accounting Office 1988, Szaro 1989, Dahl 1990, State of Arizona 1990). Reductions in the extent and composition of riparian habitat may decrease suitability and carrying capacity, thereby depressing numbers of flycatchers that can occupy an area. These effects have resulted in a contraction of the range occupied by the southwestern willow flycatcher, a reduction in the number of flycatcher populations rangewide, and



isolation of flycatcher populations, potentially changing historical emigration/immigration patterns and severing genetic exchange among populations.

#### Recovery rate

Recovery rate characterizes the resilience or ability of a species or population to recover from different magnitudes of disturbance. The resilience of the southwestern willow flycatcher and its habitat are both relevant aspects of its survival. The southwestern willow flycatcher has declined in extent of range occupied and population size as a result of habitat loss, modification, and fragmentation. Riparian habitats by nature are dynamic, with their natural distribution in time and space governed mostly by flood events and stream-flow patterns. Current conditions along southwestern rivers and streams are such that natural or historic flow patterns have been greatly modified and reduced. Rivers have been impounded, channelized, diverted, and dewatered. Historic patterns of river hydrology and hydraulics have been altered and regulated so the duration and volume of seasonal precipitation and runoff no longer correspond to the river's historic behavior. Water management and flood control facilities have reduced peak discharges during seasons of high flows and have increased the duration and occurrence of minimum flows. Some watersheds are degraded, many stream channels are highly degraded, floodplain and riparian communities are reduced in extent, and the species composition of riparian communities has been modified by exotic species and herbivory by domestic livestock. These conditions have significantly diminished the potential for southwestern rivers and streams to develop suitable habitat for the southwestern willow flycatcher. The recovery rate of breeding populations will be a function of local population dynamics (i.e., total population size, annual reproductive success and mortality rates, rates of dispersal from other breeding locations) and habitat suitability. Because local populations are widely separated and small in size (Muiznieks et al. 1994, Sferra et al. 1995), stability may be difficult to achieve in the short term. These factors, combined with the small size of flycatcher populations, indicate that this species' resilience to additional disturbance is low and that recovery rates are anticipated to be slow.

#### ENVIRONMENTAL BASELINE (TAOS RESOURCE AREA)

##### Historical Information

The southwestern willow flycatcher historically nested along the major river systems within Taos Resource Area (northern New Mexico). However, during the late 1800's, overgrazing of sheep and cattle as well as Homesteading along riparian areas and water



diversions along the river systems profoundly influenced Taos Resource Area's riparian habitat. Currently, the Taos Resource Area is a checkerboard land ownership pattern involving private, State, and Tribal lands, and lands managed by other Federal entities (Bureau of Reclamation, Corps of Engineers). Most of the water sources and associated riparian habitat within the Taos Resource Area are not managed by the BLM.

#### Current Surveys/Monitoring Efforts

During 1993-1997, the BLM surveyed potential flycatcher habitat within the Rio Grande corridor. In 1993, two nesting pairs of flycatchers were located along the Rio Grande south of Taos on lands administered by the BLM. One of these sites has been occupied by a nesting pair of flycatchers each year from 1993 to 1997. The second site, located just north of the first pair, was observed by the BLM in 1993 and again in 1996 by New Mexico Department of Game and Fish (Cooper, 1996). Two singing male flycatchers were also detected in the upper Rio Grande north of Taos during 1994 and 1995, while a single individual was detected in 1997. The Taos Resource Area has supported two flycatcher territories as well as two sites containing single males. Flycatchers have also been observed on nearby private and Forest Service lands. One pair of flycatchers was identified on private land along the lower Rio Grande adjacent to BLM administered lands during 1994 and 1995. One pair has been reported on private land and two pairs were recorded on the Carson National Forest in the Upper Rio Grande Watershed in 1996. The latter sites are several miles from BLM administered lands.

All flycatcher sites located on BLM administered lands, with the exception of one pair, were located in relatively undisturbed habitat (i.e., low human use areas). The one pair of flycatchers established their residency near an intensively used BLM campground built in 1965. The nesting area is also adjacent to a State highway, and has been used by recreational float-boaters along the Rio Grande since the late 1970s.

During the summer of 1997, possible foraging areas for brown-headed cowbirds were identified within 5 miles of Southwestern willow flycatcher nesting sites within the Taos Resource Area. When this survey was conducted (late summer), the foraging observed occurred on private land.

The brown headed cowbird (*Molothrus ater*) is a brood parasite suspected of contributing to the decline of the Southwestern willow flycatcher. Little information is available, however, on the distribution and behavior of brown-headed cowbirds in the Southwest, making the design of an appropriate cowbird control program difficult. This study attempted to provide enough data to begin developing an appropriate cowbird monitoring and control program.



## Riparian Habitat

For the purposes of this management plan, we will be referring to flycatcher habitat as that habitat that the species uses or could use for nesting and foraging during the breeding season. In general, flycatcher habitat varies throughout the Resource Area, ranging from areas with dense willow thickets to areas with some riparian vegetation that may become habitat within several years. Because a recovery plan for the flycatcher has not been developed, five categories were developed during the consultation process and will be used as part of this Management Plan to describe the various stages of habitat in the Taos Resource Area. Habitat categories developed are as follows: (1) occupied, (2) unoccupied, currently potential, (3) potential flycatcher habitat in the short-term (approximately 1-3 years), (4) potential flycatcher habitat, but long-term (approximately 4-10 years), and (5) no potential flycatcher habitat (refer to Table 1).

TABLE 1  
FLYCATCHER HABITAT CATEGORY

*Category	Miles	Percentage of Area
Occupied	0.5	<1%
Unoccupied, currently potential	0	0
Potential, w/in 1-3 years	9	6.5%
Potential, w/in 4-10 years	12.4	9%
No Potential	116.65	84%
Total	138.5	100%

\* These categories were developed in June, 1997 for the Taos Resource Area biological assessment. They will be used and updated periodically in the interim period until a recovery plan is developed for the southwestern willow flycatcher.

Occupied habitat are those areas that are currently or have in the past been inhabited by a single or pair of flycatchers. Unoccupied but currently potential areas are considered to contain all the components of flycatcher habitat but are currently uninhabited by flycatchers. Flycatcher habitat components are described in the Life History section of this



## Plan.

Areas considered potential flycatcher habitat in the short term (approximately 1-3 years) contain some elements of flycatcher habitat but need 1-3 years in order to obtain more habitat structure (e.g., dense willow thickets, surface water present, etc.). Areas considered potential flycatcher habitat in the long-term (approximately 4-10 years) contain minimal vegetation structure and thus, will need many years to grow into flycatcher habitat. Areas considered to have no potential flycatcher habitat are those riparian areas that because of hydrologic conditions or vegetative characteristics are unlikely to become habitat for this species in the foreseeable future.

Table 1 describes the miles and percent of riparian areas within the Taos Resource Area that are: (1) occupied; (2) unoccupied, currently potential flycatcher habitat; (3) potential flycatcher habitat in the short-term (1-3 years); (4) potential flycatcher habitat, but long-term (4-10 years); and (5) no potential flycatcher habitat in the foreseeable future.

Occupied habitat is found along the Rio Grande-South and Rio Grande-Wild and Scenic River segments. The Rio Grande-South has been identified as nesting habitat since 1993, while only singing males have been observed along the Rio Grande-Wild and Scenic River portion in 1995 and 1997.

There are no areas that are considered to be unoccupied, currently potential flycatcher habitat within the Taos Resource Area. There are some areas (i.e., Rio de Truchas) that are presently short term (1-3 years) but are progressing rapidly toward currently potential.

Potential habitat in the short term (1-3 years) is located within two areas (Rio de Truchas and Agua Caliente). These areas currently support some of the vegetation characteristics common within flycatcher habitat (e.g., dense willow thickets, perennial water). Rio de Truchas contains approximately 7.5 miles of riparian-wetland habitat. This area has been surveyed for flycatchers from 1993-1996; no flycatchers have been detected. Agua Caliente contains 2.5 miles of riparian-wetland habitat, but has not been formally surveyed for flycatchers.

All other riparian-wetland areas are considered to contain flycatcher habitat in the long term (i.e., 4-10 years) or no potential flycatcher habitat in the foreseeable future (refer to Table 1).

## MANAGEMENT PLAN (BIOLOGICAL OPINION) REQUIREMENTS

### Riparian Habitat Mapping



Develop maps that convey the location, size, shape, and spacing of flycatcher habitat patches throughout the resource area (these areas will be in varying stages of development).

#### Survey Prioritization

Prioritize areas to be surveyed following the most recent, recommended protocol.

#### Monitoring

Monitor flycatcher nest sites to assess reproduction and the possibility of cowbird parasitism, following the most recent, accepted protocols. Initiate cowbird trapping on BLM land if parasitism is documented.

#### Management Guidelines

Outline management guidelines (fencing, grazing system used, five mile radius/livestock concentration areas, or flycatcher habitat improvement activities) for areas identified as occupied, currently potential, potential in the short-term (1-3 years), and potential in the long-term (4-10 years).

### MANAGEMENT PLAN (BIOLOGICAL OPINION) IMPLEMENTATION

#### Riparian Habitat Mapping

The original requirement of the Biological Opinion was completed in 1997, however, updating riparian habitat mapping will be a continuing effort.

The Taos Resource Area contains 138.5 miles of riparian habitat, of which 21.9 miles (16 percent) is identified as currently occupied or potential flycatcher habitat in the short and long term (refer to Table 1). The remainder of the riparian habitat, due to the vegetative characteristics or hydrological conditions, are not considered potential flycatcher habitat.

All flycatcher habitat patches within the Taos Resource Area have been mapped. Appendix A contains these maps that depict the location, size, shape, and spacing of all flycatcher habitat patches throughout the Taos Resource Area.

#### Survey Prioritization

This requirement was completed in 1997. Additional prioritization will occur as additional habitats are reoccupied by flycatchers and short and long term potential habitats move toward currently potential habitat.



All of the riparian habitat that is occupied or has the potential (short or long term) has been prioritized for conducting surveys as follows.

Occupied habitat (Rio Grande-South -  $\frac{1}{4}$  mile) is the #1 priority and have been identified to be surveyed every year according to the most current protocol methods. A second occupied area due to sightings only (Rio Grande-Wild and Scenic -  $\frac{1}{4}$  mile) was identified with singing males in 1995 and 1997. This area does not have the appropriate habitat to support Southwestern willow flycatchers but could possibly in the long-term. Due to the inaccessibility of the area however, (two day float trip) only one or two surveys a year can be conducted. In addition, due to the length of the area (approximately 40 miles) current protocol methods will be amended for this area. We will coordinate annually with FWS on this particular survey area.

Potential Habitat, short-term (1-3 years) is the #2 priority and have been identified to be surveyed every year according to the most current protocol methods.

Potential Habitat, long-term (4-10 years) is the #3 priority and will be surveyed on an intermitted basis as funds and personnel are available. As these habitats progress toward short-term potential, they will be surveyed on a more regular basis.

Appendix B contains copies of southwestern willow flycatchers surveys conducted during 1997.

### Monitoring

This requirement was initiated during the 1997 nesting season. Monitoring of nest sites will continue in 1998 and beyond as identified under the Reasonable and Prudent Measures of the Biological Opinion.

Nest sites within the occupied habitat (Rio Grande-South -  $\frac{1}{4}$  mile) have been identified to be monitored every year according to the most current protocol methods. Appendix C contains copies of the monitoring efforts conducted in 1997.

If cowbird parasitism is identified as affecting nesting Southwestern willow flycatchers through this monitoring effort, the BLM will work in cooperation with the FWS to determine, 1) the best method (i.e., cowbird trapping) of reducing or eliminating this threat, and 2) what types of sites (corrals etc.) are considered concentration areas.

### Management Guidelines

This requirement was initiated in 1997, and will continue to



be updated as new information about the flycatcher or it's habitat is acquired. The following will be the interim management guidelines for specific flycatcher habitats within the Taos Resource Area, until a recovery plan is developed and new guidelines are identified.

#### Occupied Habitat

One area (Rio Grande-South) has been identified as occupied habitat (approximately  $\frac{1}{4}$  Mile). No livestock grazing is presently occurring within this occupied habitat. As additional habitats become occupied with flycatchers in the future, re-initiation of formal consultation would occur if any of the newly occupied habitats are being grazed. The formal consultation process would outline the appropriate measures (e.g., winter grazing) needed to protect the new nesting individuals.

All possible livestock concentration areas (i.e., water sources, corrals, supplemental feeding locations) within five miles of Southwestern willow flycatcher habitat will be mapped.

No additional fencing or habitat improvements are presently planned for the currently occupied habitat. However, additional protective measures, as outlined below will be initiated in 1998 for the Rio Grande-South occupied area, to help alleviate potential human disturbance within the area.

- ♦ Using signs to direct float-boaters (this would be a mandatory requirement of commercial rafting companies) to remain in the main channel, thereby protecting the side channels (slack water areas) associated with this species.
- ♦ Placing natural barriers (e.g., boulders) to help discourage human access to the area.
- ♦ Educate the visitors to the area through a 90-100% contact rate to maintain a clean camping area, and provide bear-proof garbage containers.
- ♦ Work with Taos County to develop alternative access away from the riparian corridor to reduce highway traffic and noise.

#### Currently potential

Presently there are no areas that are classified as "Currently Potential" habitat within the Taos Resource Area. Several areas that are now in the short-term (1-3 years) potential habitat category are moving in the direction of this category.

#### Potential "Short-Term" (1-3 years)



Three areas (Rio Grande-South, Aqua Caliente, and Rio de Truchas) are presently identified as being within the Short-term category (approximately 9 Miles). No grazing is occurring on the Rio Grande-South and Aqua Caliente areas, while winter only grazing is occurring along the Rio de Truchas. No new fencing of any of these areas are planned. Two exclosures were constructed within the Rio de Truchas riparian habitat in 1997, in order to begin collecting data on winter livestock grazing of riparian areas. This information will help develop appropriate grazing management systems for riparian habitats.

All possible livestock concentration areas (i.e., water sources, corrals, supplemental feeding locations) within five miles of Southwestern willow flycatcher habitat will be mapped

#### Potential "Long-Term" (4-10 years)

Nine areas (Rio Grande-Wild and Scenic, Rio Grande-Otowi Mesa, Ojo Caliente-Riparian Demo, Ojo Caliente-Upper, Aqua Caliente, Rio Cebolla, Santa Cruz River, Rio Los Piños, and Cieneguilla) are presently identified as being within the Long-Term category (approximately 12½ Miles). Livestock grazing is occurring on only two (Rio Cebolla and Santa Cruz River) of these areas (Approximately 3½ Miles). There are plans to establish riparian pastures on both of these two areas within the next several years. In addition, planting of native vegetation (e.g., willows, cottonwoods) will continue to be accomplished within many of these long-term areas.

All possible livestock concentration areas (i.e., water sources, corrals, supplemental feeding locations) within five miles of Southwestern willow flycatcher habitat will be mapped.

#### Summary

Presently 117 miles (85 percent) of the riparian habitat that exists on public lands within the Taos Resource Area is fenced to exclude livestock grazing. In addition, another 7½ miles (5 percent) has been fenced as a riparian pasture system with winter grazing only. Except for 3½ miles of "long-term" potential habitat, all occupied, potential "short-term" and "long-term riparian habitats within the Taos Resource Area excludes grazing or has a pasture system established for winter grazing only. The remaining 3½ miles of potential "long-term" habitat that is presently not fenced, is in the planning process to be fenced as riparian pastures within the next several years.

Winter grazing systems for riparian habitats appear to be meeting many BLM objectives for riparian restoration, including increased willow and cottonwood sprouting, increased density of the native shrubs and tree components, and increase diversity of



riparian vegetation. In order to gather appropriate data to quantify these riparian restoration practices, exclosures (two) within the Truchas riparian winter pasture have been established. These exclosures will provide data to help evaluate any potential winter grazing impacts on riparian habitats.

The BLM will continue to augment native vegetation (e.g., willows, cottonwood) by planting in appropriate riparian areas.

Salt cedar and Russian olive control will continue where appropriate and cost effective. All control actions within occupied or currently potential flycatcher habitats will require additional consultation, prior to proceeding with the action.



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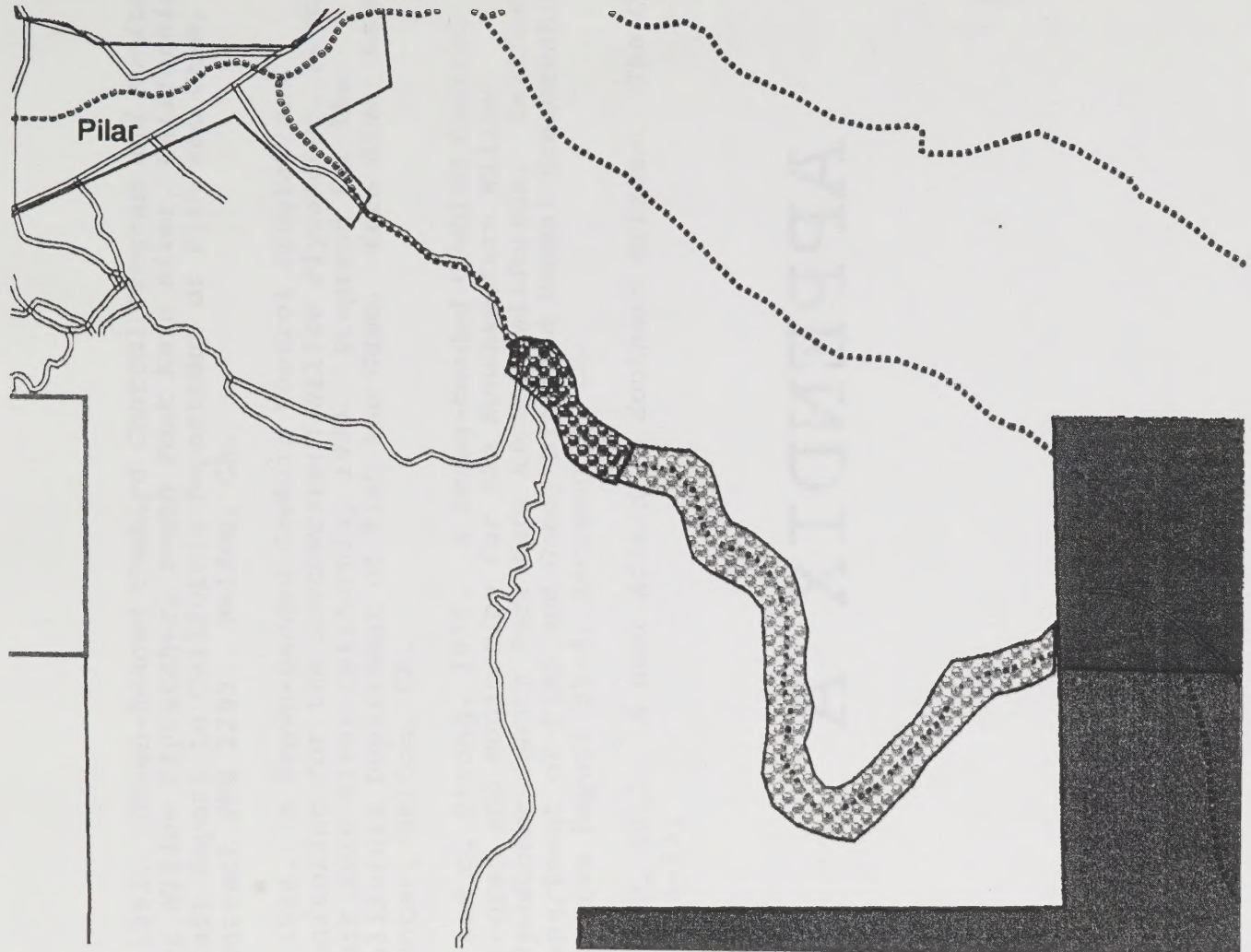
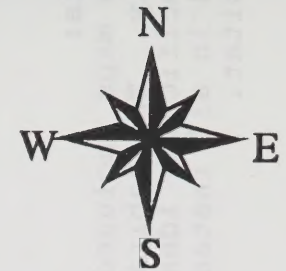
## APPENDIX A

**Note:**

The maps included in this appendix are for the readers reference only. The habitat areas shown are not of a scale which would specifically identify the categories portrayed in the map legend and in all instances they include areas which are not considered habitat.



# Aqua Caliente



ALLOTMENTS

ROADS

STREAMS

FOREST SERVICE  
NATIONAL PARKS  
INDIAN RES.  
BANKHEAD-JONES  
PRIVATE  
STATE  
BLM  
MISC

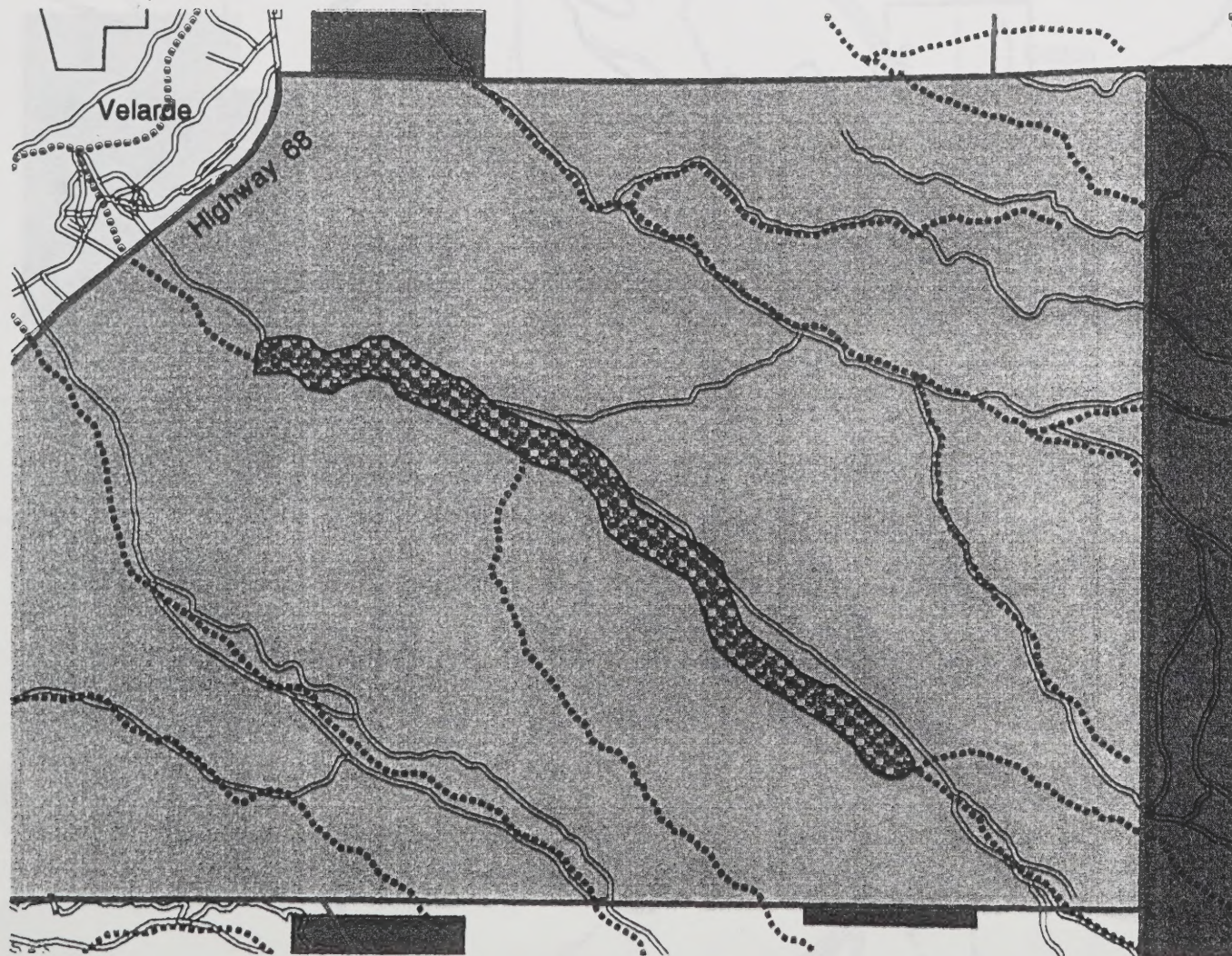
SHORT TERM  
FLYCATCHER  
HABITAT

LONG-TERM  
FLYCATCHER  
HABITAT

0.75 0 0.75 1.5 Miles



# TRUCHAS



ALLOTMENTS

ROADS

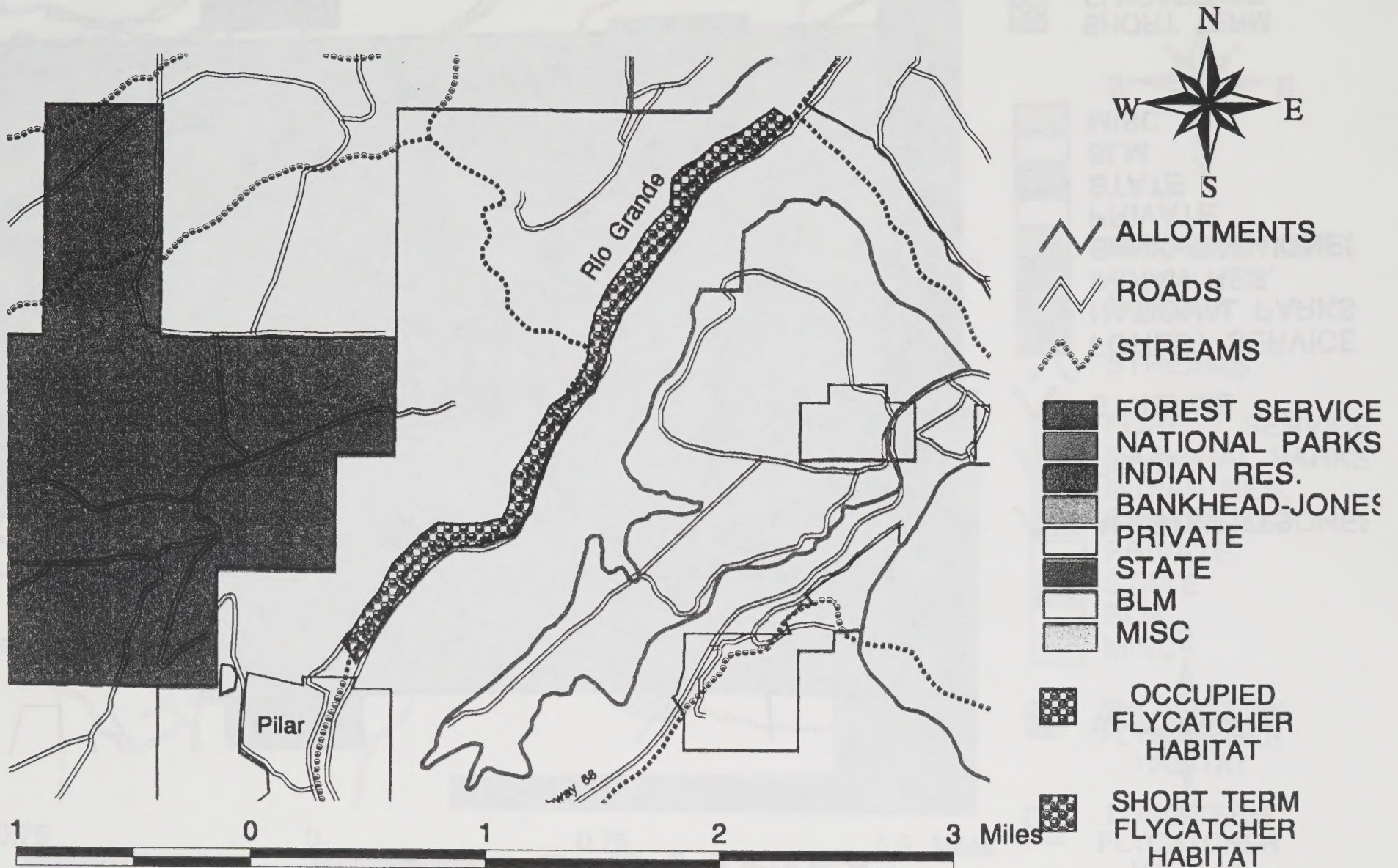
STREAMS

FOREST SERVICE  
NATIONAL PARKS  
INDIAN RES.  
BANKHEAD-JONES  
PRIVATE  
STATE  
BLM  
MISC

SHORT TERM  
FLYCATCHER  
HABITAT

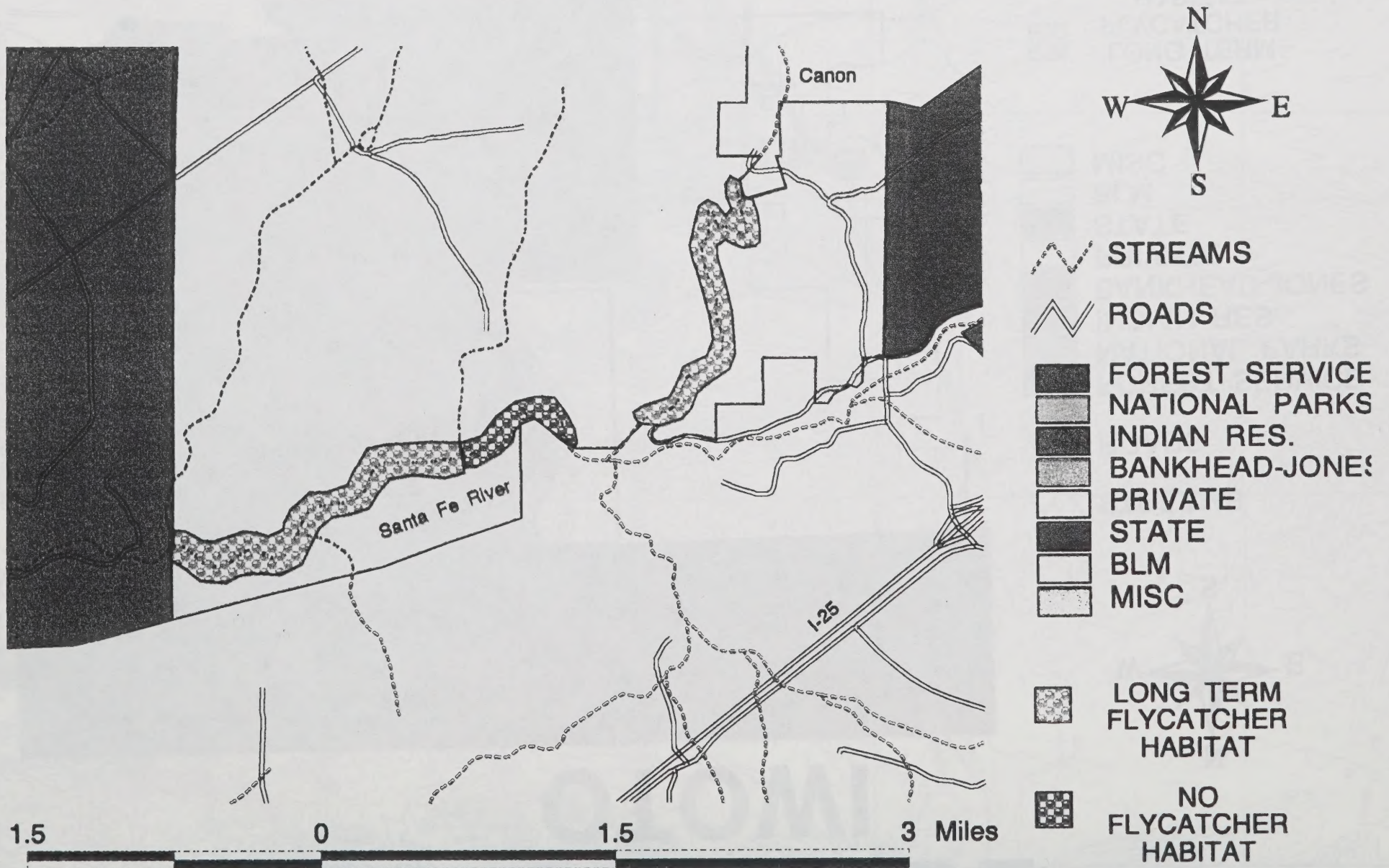


# ORILLA VERDE



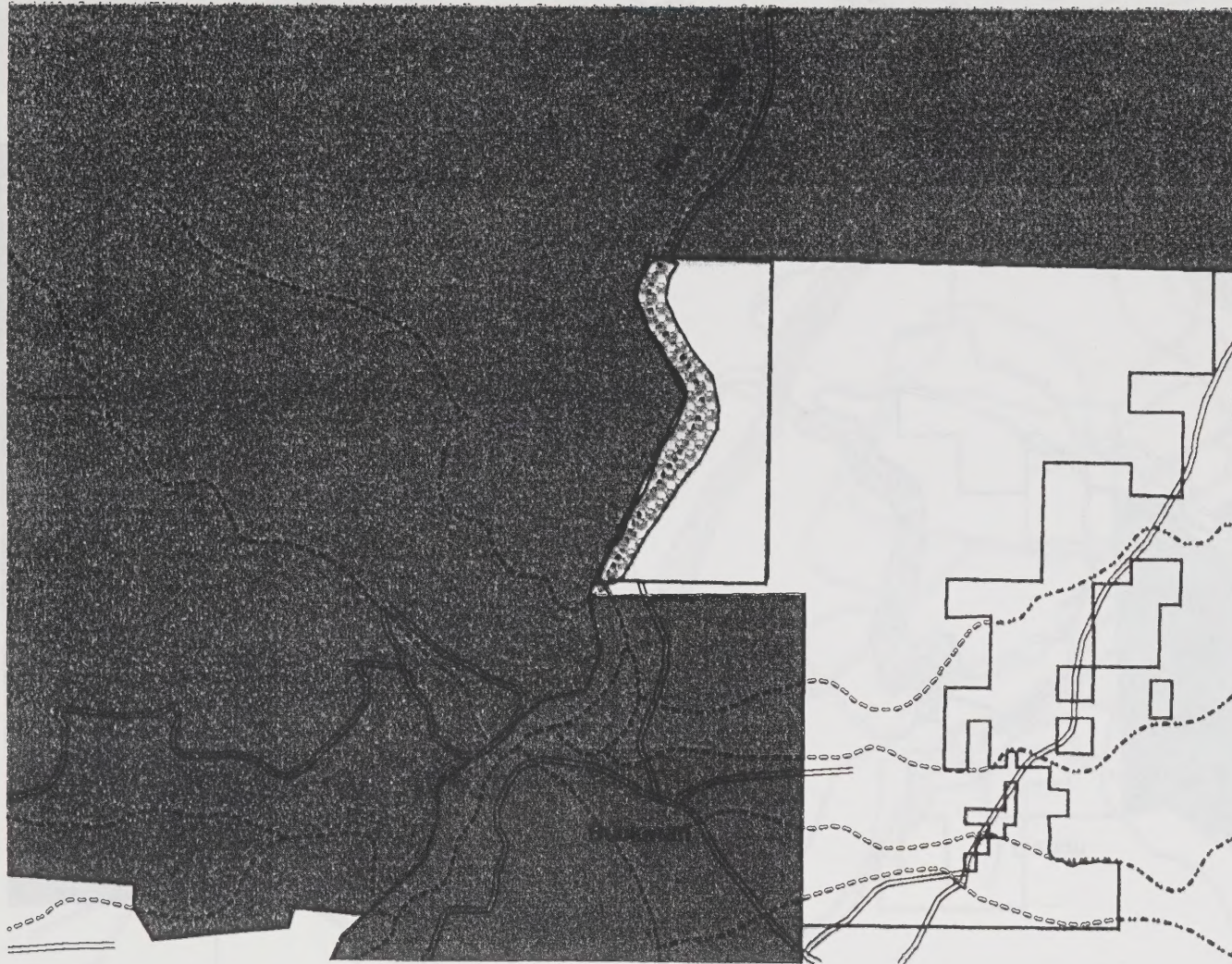


# CIENEGUILLA





# RIO GRANDE OTOWI



STREAMS



ROADS



FOREST SERVICE



NATIONAL PARKS



INDIAN RES.



BANKHEAD-JONES



PRIVATE



STATE



BLM



MISC



LONG TERM  
FLYCATCHER  
HABITAT



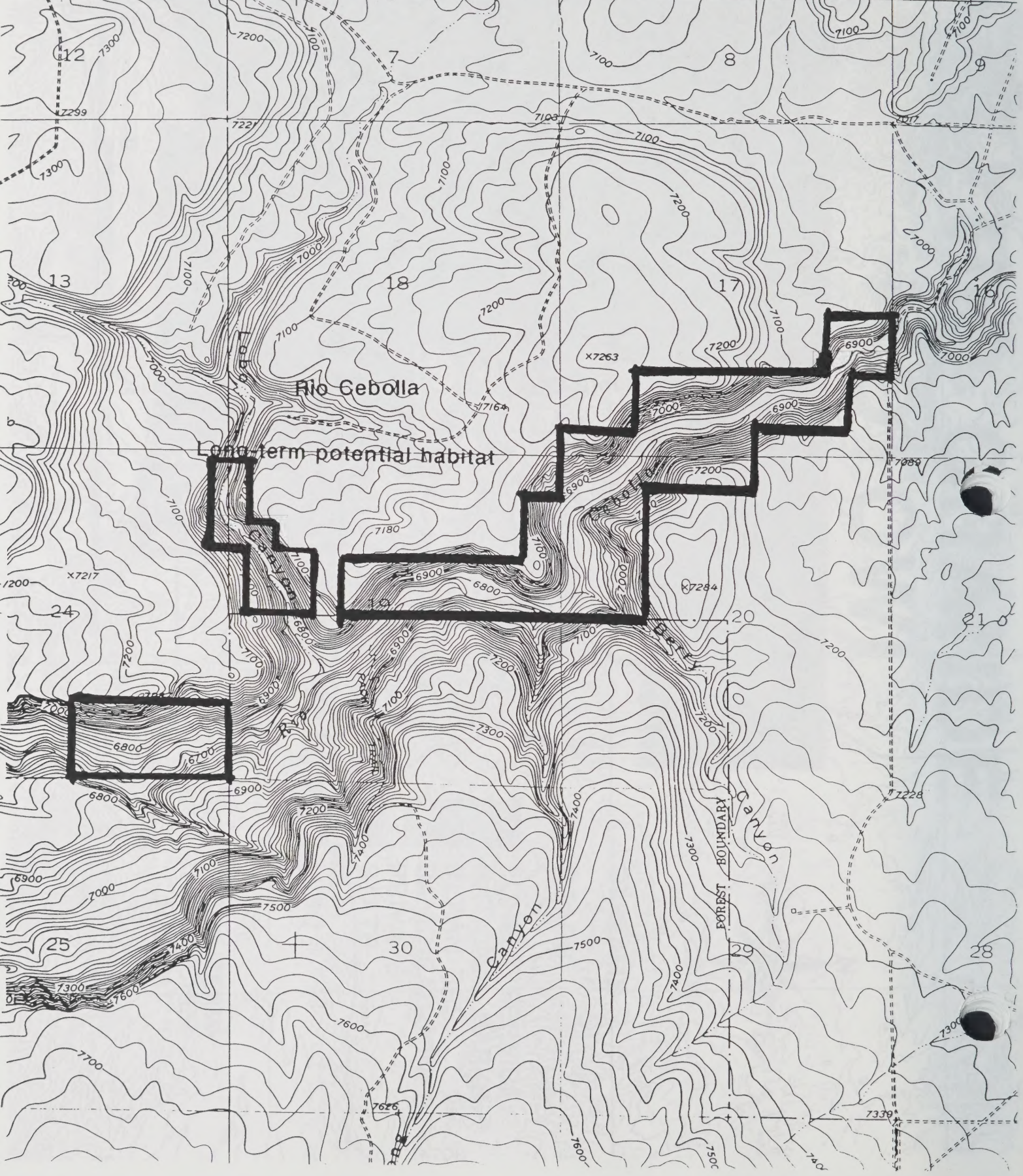






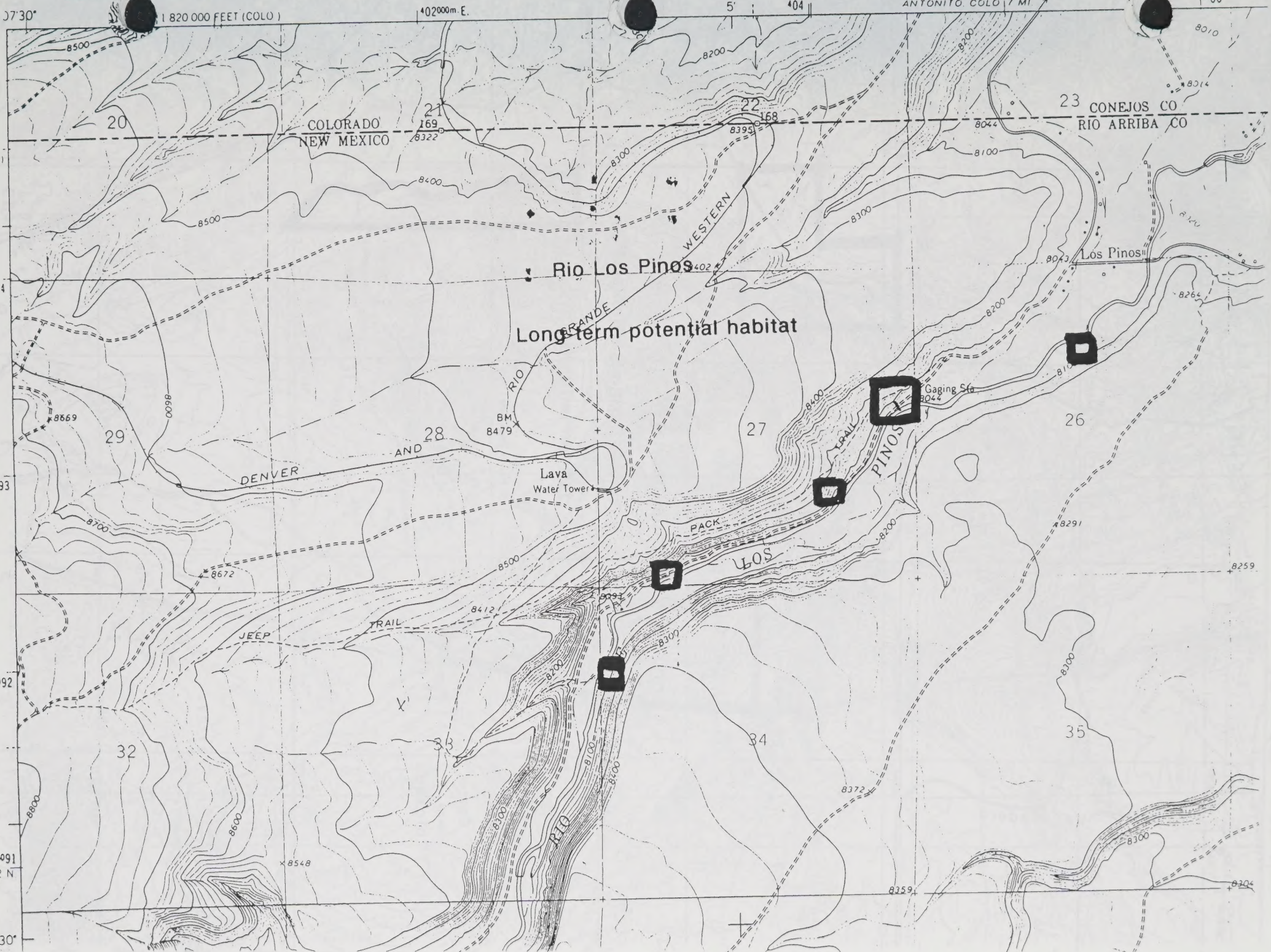
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NEW MEXICO-RIO AR  
7.5 MINUTE SERIES (TOP

4657 II  
MARILLA 1:62 500' 350 R 2 E R 3 E 40' 351 380 000 FEET 352 353 354





GEOLOGICAL SURVEY



37°30'

1 820 000 FEET (COLO)

102°00' W

5'

404

ANTONITO COLO 7 MI

106

20

COLORADO  
NEW MEXICO

21

169  
8322

22

168  
8395

23

CONEJOS CO  
RIO ARRIBA CO

Los Pinos

Rio Los Pinos  
Long term potential habitat

28

BM  
8479

DENVER

Lava  
Water Tower

27

PACK  
TRAIL

LOS  
PINOS

26

8291

8259

JEEP  
TRAIL

32

34

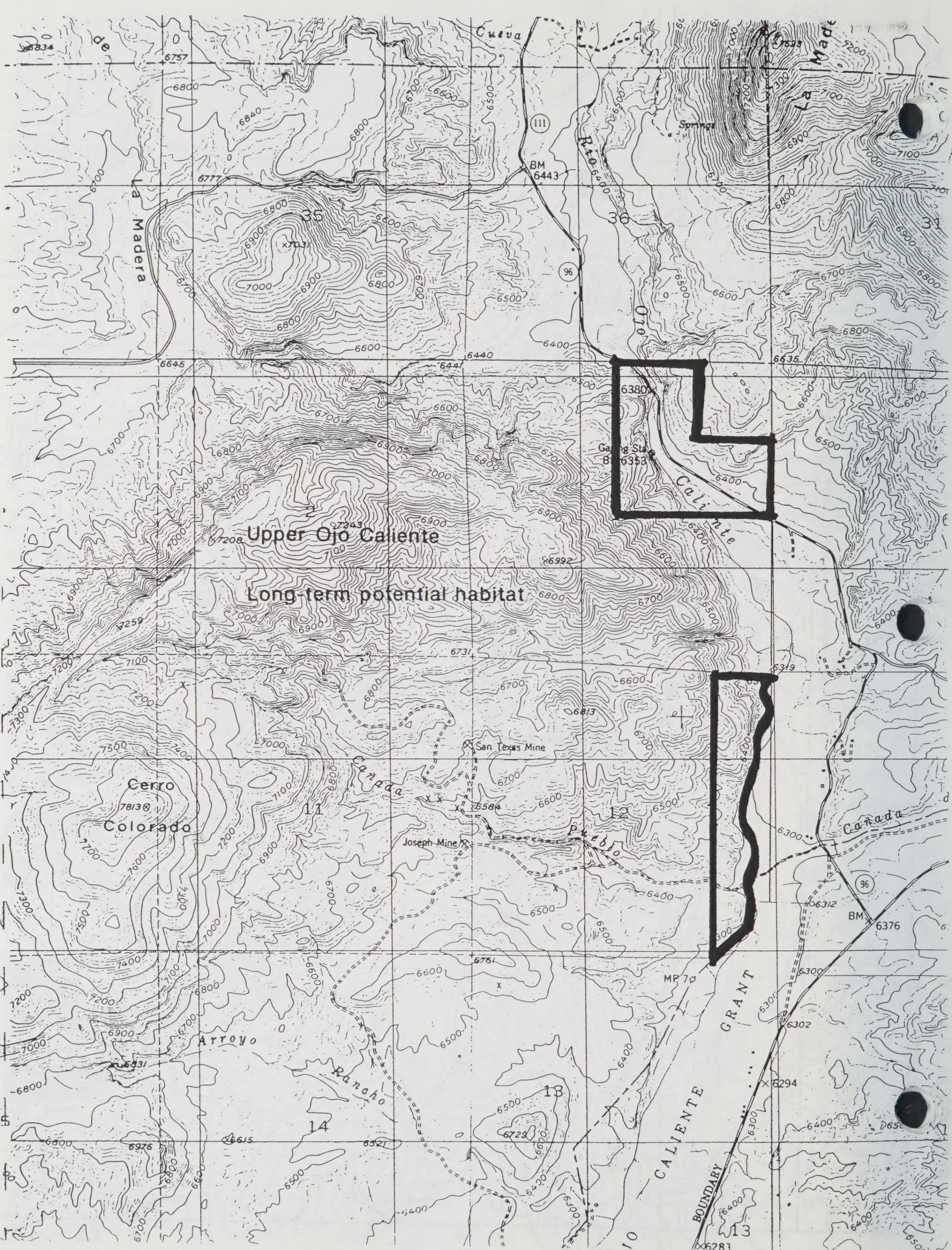
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4091

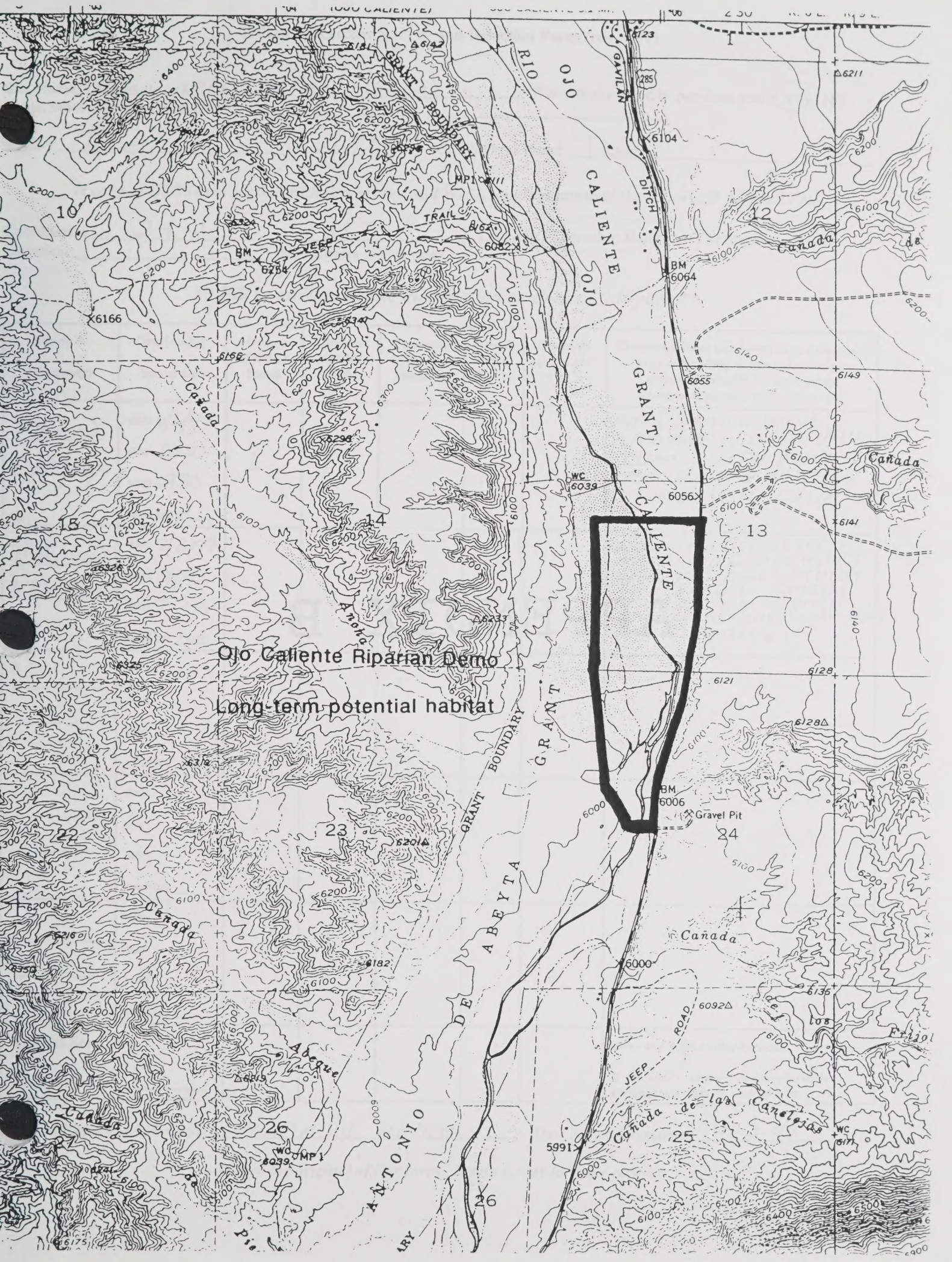
2 N

30°









Ojo Caliente Riparian Demo  
Long-term potential habitat



# APPENDIX B



## Willow Flycatcher Survey and Detection Form (rev. 4/97)

Site Name ORILLA VERDE TAOS SW Was site surveyed in previous year? ☒ Yes ☐ No  
 If yes, what site name was used? \_\_\_\_\_  
 County TAOS State NM USGS Quad Name TA6+

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ☐ Yes ☐ No

Coordinates 24 N 11 E Lat Long / Township-Range / UTM (circle one)  
 Elevation \_\_\_\_\_ feet / meters (circle one)

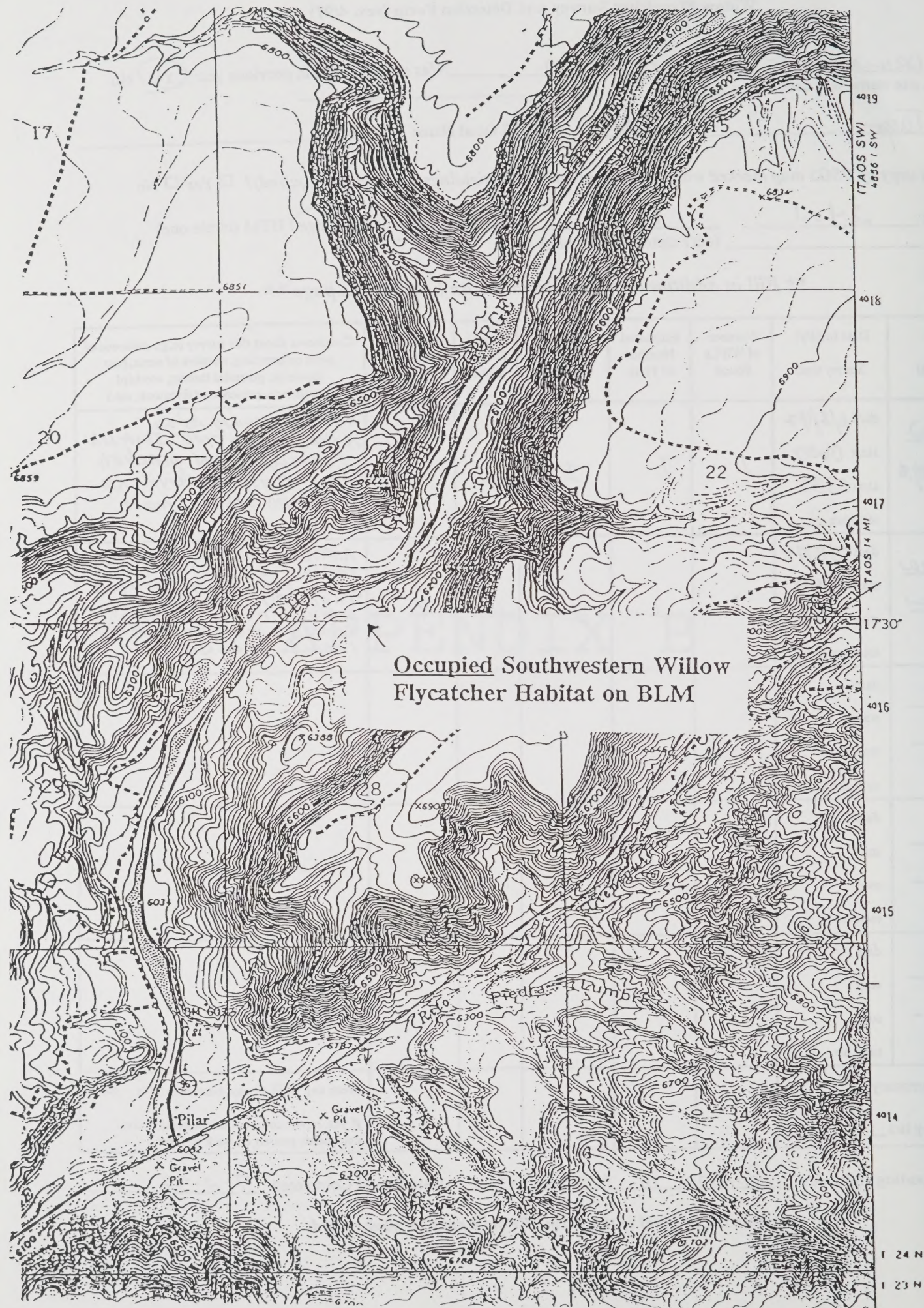
**\*\* Fill in additional site information on back of this page \*\***

Survey # Observer(s)	Date (m/d/y) Survey time	Number of WIFLs Found	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents, potential threats, cowbird abundance, presence of livestock, etc.)
<u>P. Herrera</u> <u>S. Berggren</u>	date <u>6/3/97</u> start <u>0630</u> stop <u>0830</u> total hrs <u>2</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>N</u>	<u>N</u>	HEARD SINGING AS WE APPROACHED THE ISLAND CLEARLY SEEN PERCHED ON RUSSIAN OLIVE. NO COWBIRDS SEEN. 1 male
<u>P. Herrera</u> <u>S. Thacker</u>	date <u>7/8/97</u> start <u>0640</u> stop <u>0750</u> total hrs <u>1.10</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>N</u>	<u>Y</u>	APPROACHING THE SITE A MALE WIFL WAS HEARD FROM THE ROAD WITHOUT TAPE PLAYING. NEARBY APPROXIMATELY 25 YARDS COWBIRD ACTIVITY WAS NOTED 1 MALE CALLING.
<u>3</u> _____ _____ _____	date _____ start _____ stop _____ total hrs _____						
_____ _____ _____	date _____ start _____ stop _____ total hrs _____						
_____ _____ _____	date _____ start _____ stop _____ total hrs _____						
Overall Summary							Were any WIFLs color-banded? Yes No
Total survey hrs _____							If yes, report color combination(s) in the comments section on back of form

of Reporting Individual PAMELA M. HERRERA Date Report Completed 7-2-97

Submit the original of this form. Retain a copy for your records.







## Willow Flycatcher Survey and Detection Form (rev. 4/97)

Site Name PIO GRANDE Was site surveyed in previous year? Yes ☐ No ☐  
 If not, what site name was used? \_\_\_\_\_

County TOS State NM USGS Quad Name UTE MOUNTAIN

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ☐ Yes ☐ No

Coordinates 32 N 11 E Lat Long / Township-Range / UTM (circle one)  
 Elevation \_\_\_\_\_ feet / meters (circle one)

**\*\* Fill in additional site information on back of this page \*\***

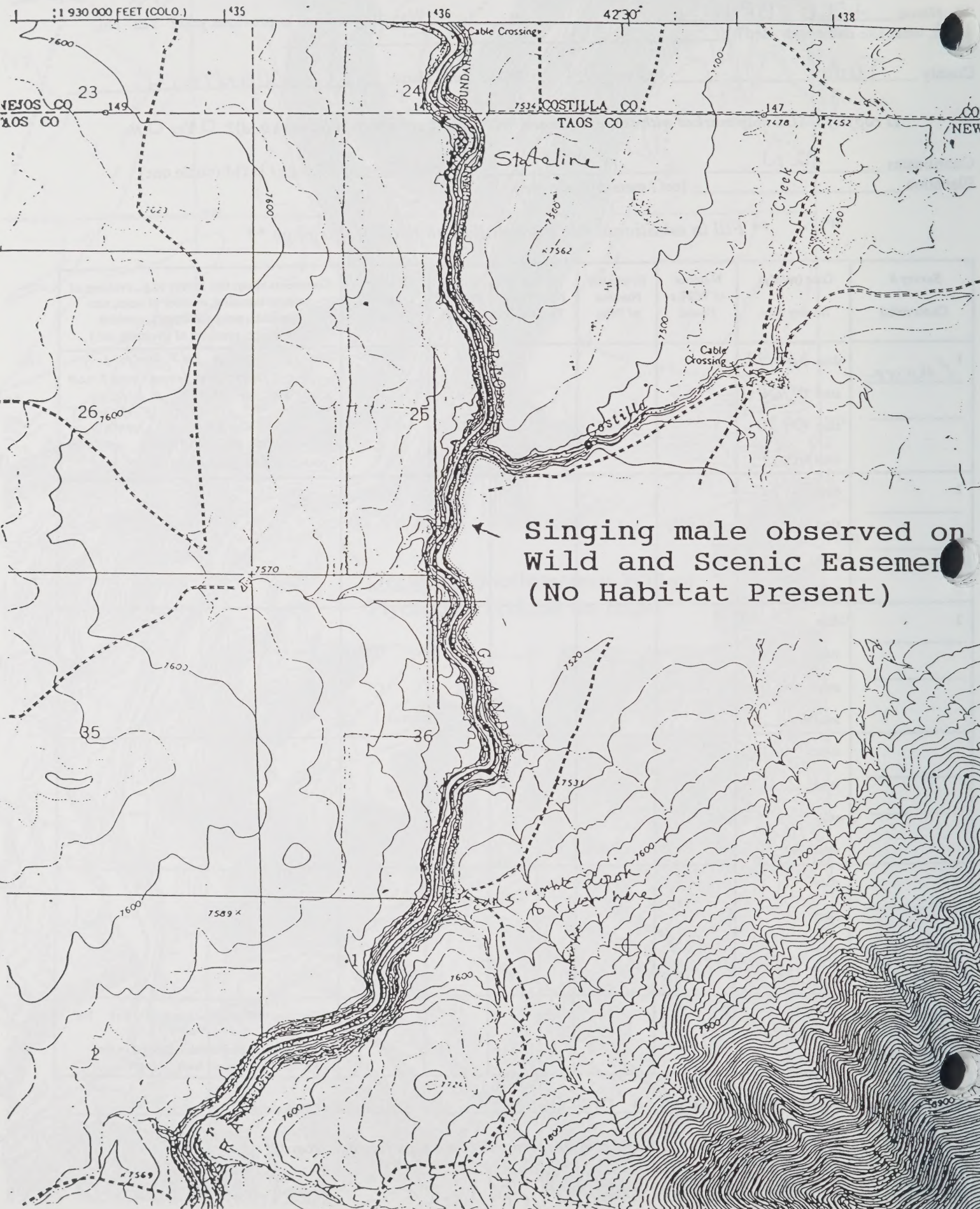
Survey # Observer(s)	Date (m/d/y) Survey time	Number of WIFLs Found	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N	Cowbirds Detected? Y or N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents, potential threats, cowbird abundance, presence of livestock, etc.)
1 <u>P. Herrera</u>	date <u>6/24/97</u> start <u>0700</u> stop <u>0930</u> total hrs <u>2.5</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>N</u>	<u>N</u>	While doing a 3rd survey I HAK JUST PASSE IN COSTILLA CREEK A HERRERA A WIFL CALL I SAW IT PERCHED ON A BRANCH A WATCHES HIM AS HE CALLED. NO COWBIRDS SEEN. 1 MALE.
2 _____	date _____ start _____ stop _____ total hrs _____						
3 _____	date _____ start _____ stop _____ total hrs _____						
_____	date _____ start _____ stop _____ total hrs _____						
_____	date _____ start _____ stop _____ total hrs _____						
Overall Summary							Were any WIFLs color-banded? Yes <input type="checkbox"/> No <input type="checkbox"/>  If yes, report color combination(s) in the comments section on back of form
Total survey hrs _____							

Name of Reporting Individual PAMELA MITERREIRA Date Report Completed 7-2-97

Submit the original of this form. Retain a copy for your records.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



Singing male observed on  
Wild and Scenic Easement  
(No Habitat Present)

can't climb back  
to fish here



## APPENDIX C



## SUMMARY OF NEST MONITORING SURVEYS FOR THE SOUTHWESTERN WILLOW FLYCATCHER AT ORILLA VERDE RECREATION AREA ON THE RIO GRANDE, TAOS COUNTY, NEW MEXICO

### INTRODUCTION

In order to fulfill a biological opinion requirement issued by U. S. Fish and Wildlife Service (USFWS), the Bureau of Land Management (BLM) Taos District retained Celia Cooper of Permits West, Inc. to perform southwestern willow flycatcher (*Empidonax traillii extimus*) nest monitoring surveys during the summer of 1997. The purpose of the surveys was to determine whether or not active WIFL nests were being parasitized by brown-headed cowbirds (*Molothrus ater*). The surveys were conducted at the BLM administered Orilla Verde Recreation Area, located on the Rio Grande in Taos County, New Mexico. Southwestern willow flycatchers (WIFLs) are known to be summer residents at Orilla Verde and nests have been discovered in at least two habitat patches in recent years.

### SURVEY METHODS

In mid to late June, BLM personnel conducted presence/absence surveys for WIFLs at Orilla Verde Recreation Area and found one territory (singing male) on the island just upstream from the campground. Nest monitoring surveys began in late June and were conducted under USFWS Permit # PRT - 825591. Nest monitoring surveys consisted of searching occupied territories for nests, observing pairs or individual willow flycatchers for nesting behavior or vocalizations, and, on detection of nests, examining the contents. The number of visits to the territory followed a general nesting chronology schedule for the WIFLs in the area. Care was taken not to disturb birds more than necessary, and USFWS survey protocol procedures were followed whenever applicable<sup>1</sup>. Standardized USFWS data sheets were used to record information during each visit and a U. S. Geological Service 7.5 minute topographic map was used to delineate survey areas and indicate territory locations (see attachment).

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<sup>1</sup>Sogge, M. K., R. M. Marshall, S. J. Sferra, T. J. Tibbitts. 1997. A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol. National Park Service Technical Report NPS/NAUCPRS/NRTR-97/12.



## RESULTS

Following the detection of a single territory (singing male) in late June by BLM personnel, a nest monitoring survey took place on June 30. At that time, most WIFL pairs should have been well into the nesting cycle for the upper Rio Grande area. During the June 30 survey, a pair of WIFLs and a nest were observed. The male was singing on arrival and no taped play-back calls were necessary to elicit responses from either the male or female. After a search of the territory, a female was discovered on the extreme northeast side of the island. It is presumed that this female was the mate of the male, as no other male WIFLs were observed on the island. The female did not vocalize except for several "whits" when approached. The nest was discovered shortly thereafter, near the area where the female was first observed. The nest was located approximately 14 feet up in a tamarisk (*Tamarix spp.*) tree and rested in a fork of branches at the trunk (stem). The stem of the tree was approximately 2" diameter at breast height and was about 18 feet tall. The nest patch was fairly dense with larger tamarisk trees representing an overstory and smaller, tightly packed stems of tamarisk and some coyote willow (*Salix exigua*) making up the closed understory. The soil beneath the patch was damp from recent rains, and open water was located less than 10 feet from the nest tree. A mirror pole was used to check the contents of the nest and it was determined to be empty. A thorough search for egg shell fragments, or any other sign indicating that the nest had been used recently was conducted around the base of the tree and throughout the patch immediately adjacent to the nest tree. The female did not remain in the nest patch during this search but a few interaction vocalizations (e. g. twitters and whits) could be heard between the male and the female nearby. After locating both birds again and checking for any possible fledglings and/or additional nests, about an hour was spent observing the nest and nest patch from a distance. One of the birds (thought to be the female) approached the nest area (but not the nest) only once during this time and appeared to be carrying something in her beak (possibly nest material).

The site was revisited on July 6 and the male was singing vigorously on arrival. A second male was heard on the east bank of the Rio Grande directly across from the south end of the island. It is presumed that both of the WIFLs were male because of repeated fitzbews between the two, indicating territorial behavior. After watching both males for interactions with females or other nesting behavior, the nest discovered on June 30 was checked and was found to be empty, with no signs of recent activity. No females or fledglings were detected on the island, or on the east bank on that day. The island nest site was observed from a distance for approximately 1/2 hour with no notable activity.

On July 14 and August 11 additional visits were made to the site and no detections of any WIFLs were obtained. The nest was checked and was found empty on both days, with no signs of any activity around the nest (e.g. eggshell fragments, feathers, deceased young). A visual search of the entire island was made to check for non-vocalizing birds, but no willow flycatchers were seen or heard on either day, and no other nests were found.



## Brown-headed Cowbirds

Brown-headed cowbirds were observed most frequently on the June 30 visit; in fact, a female cowbird entered the nest patch and vocalized during the first visit to the nest. At that time, the female WIFL had already left the patch and no interaction between the two species was observed. Also on that day, a lesser goldfinch (*Carduelis psaltria*) nest located approximately 25 feet from the WIFL nest was discovered to contain 2 goldfinch eggs and 2 cowbird eggs.

On the July 6 visit, 5-6 pairs of cowbirds were observed on the island, with some individuals entering patches of vegetation. A Bullock's oriole (*Icterus bullockii*) nest was suspected to have been parasitized. The lesser goldfinch nest contained one cowbird nestling.

On July 14, 3-4 cowbirds were detected on the island and the cowbird nestling was discovered dead in the goldfinch nest. It appeared to have died recently and was probably at least a week away from fledging before death.

On August 11, no cowbirds were seen or heard.

## **SUMMARY**

The Orilla Verde island pair of southwestern willow flycatchers appeared to have failed in their attempt to nest in 1997. The new nest structure and presence of both birds on the territory on June 30 indicated that: 1) the nest contained nestlings or eggs that disappeared prior to the June 30 visit; 2) the pair fledged young that perished prior to the June 30 visit; or 3) the nest never contained eggs or nestlings.

Often willow flycatchers will build a new nest if the first one fails. It is possible that the nest discovered on June 30 was a second nest, but this is unlikely because thorough searches of the island did not reveal alternate nests that were built in 1997 (however, old nests from previous years were found). It is likely that the nest discovered on June 30 was the original nest and was abandoned by the pair following failure.

It is unknown if brown-headed cowbirds were responsible for the nest failure because no cowbird eggs or nestlings were ever observed in the nest during the survey. However, one observation of a female cowbird was noted while visiting the nest patch on June 30, and there were abundant cowbirds using the island area and parasitizing other birds throughout the surveys.

Disappearances of eggs and/or nestlings seem to be a common phenomenon for nesting willow flycatchers in New Mexico. Despite four visits to the site, it is unknown if predation, parasitism, or another cause is responsible for the apparent nest failure of the WIFLs at Orilla Verde. Future nest monitoring surveys of the area should begin earlier in the season and may require increased time observing the nest area from a distance in order to determine nest outcomes of resident WIFL pairs.



## Willow Flycatcher Survey and Detection Form (rev. 4/97)

Site Name Orilla Verde Recreation Area Was site surveyed in previous year? ☒ Yes ☐ No  
 yes, what site name was used? Same  
 County Taos State NM USGS Quad Name Carson, NM

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? ☐ Yes ☐ No

Coordinates T24N R11E SW 1/4 21 Lat Long / Township-Range / UTM (circle one)  
 Elevation \_\_\_\_\_ feet / meters (circle one)

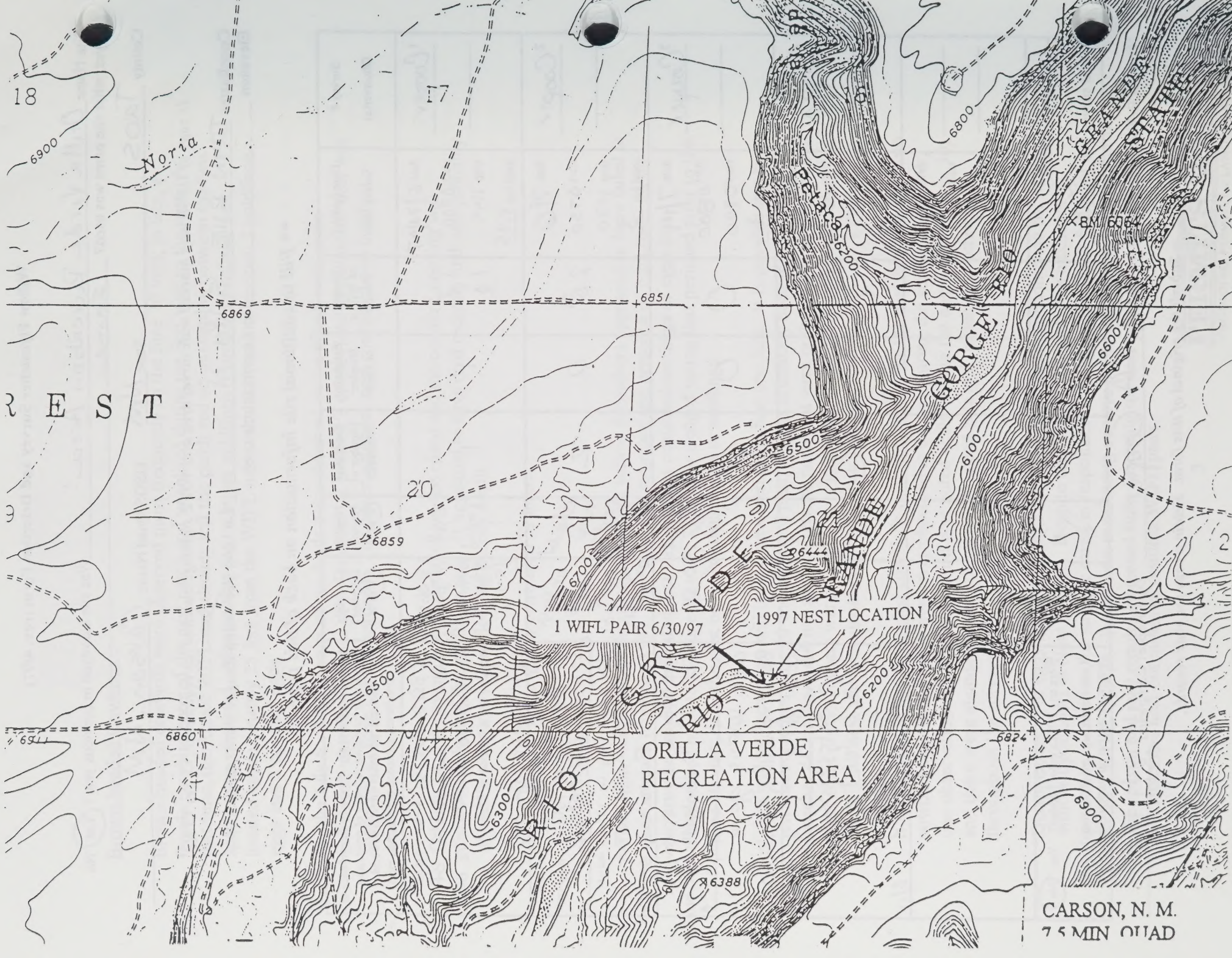
**\*\* Fill in additional site information on back of this page \*\***

Survey # Observer(s)	Date (m/d/y) Survey time	Number of WIFLs Found	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? <input checked="" type="radio"/> Y or <input type="radio"/> N	Cowbirds Detected? <input checked="" type="radio"/> Y or <input type="radio"/> N	Comments about this survey (e.g., evidence of pairs or breeding, number of nests, nest contents, potential threats, cowbird abundance, presence of livestock, etc.)
<u>1 Cooper</u>	date <u>6/30/97</u> start <u>0800</u> stop <u>1145</u> total hrs <u>3.45</u>	<u>1 ♂</u> <u>1 ♀</u>	<u>1</u>	<u>1</u>	<u>2 old</u> <u>1 new</u>	<u>1 ♀ obs. in patch;</u> <u>Numerous</u> <u>others.</u> <u>(8-10)</u>	<u>♀ BRCO obs. 5' from nest</u> <u>calling. Numerous obs. of</u> <u>♂ &amp; ♀ BRCO in area. 2 BRCO</u> <u>eggs in LEGO nest</u> <u>1997 nest empty.</u>
<u>2 Cooper</u>	date <u>7/6</u> start <u>0730</u> stop <u>1030</u> total hrs <u>3</u>	<u>2 ♂</u>	<u>0</u>	<u>2</u>	<u>checked</u> <u>new</u> <u>nest for</u> <u>activity</u>	<u>at least</u> <u>5 or 6</u> <u>pairs</u> <u>and indiv.</u> <u>numerous</u>	<u>14' up in 2' dia. tam. Located</u> <u>at NE edge of island, approx</u> <u>8' from water</u> <u>BRCO nesting in LEGO nest</u> <u>Nest still empty ♀ not</u> <u>observed Thoroughly searched</u>
<u>3 Cooper</u>	date <u>7/14</u> start <u>0800</u> stop <u>0900</u> total hrs <u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>checked</u> <u>new</u> <u>nest</u>	<u>3-4</u>	<u>for additional WIFL and/or</u> <u>sign of ♀ on both territories.</u> <u>all WIFLs gone</u> <u>BRCO nestling in LEGO</u> <u>nest dead.</u> <u>8/27/14 ↑</u>
<u>Cooper</u>	date <u>8/11</u> start <u>0800</u> stop <u>0845</u> total hrs <u>.45</u>	<u>0</u>	<u>0</u>	<u>0</u>			<u>no detections</u> <u>no activity,</u> <u>nest empty</u> <u>no cowbirds</u> <u>8/11</u>
	date _____ start _____ stop _____ total hrs _____						
Overall Summary		<u>1</u>	<u>1</u>	<u>1</u>	<u>Y</u>	<u>Y</u>	Were any WIFLs color-banded? Yes <input checked="" type="radio"/> No <input type="radio"/>
Total survey hrs <u>8.5</u>							If yes, report color combination(s) in the comments section on back of form

Name of Reporting Individual Celia A Cooper Date Report Completed 8/11/97

Submit the original of this form. Retain a copy for your records.





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Noria

6869

6851

R E S T

20

6859

1 WIFL PAIR 6/30/97

1997 NEST LOCATION

ORILLA VERDE  
RECREATION AREA

CARSON, N. M.  
75 MIN QUAD







REST

ORILLA VENTURE  
REGISTRATION AREA

CANON, M. M.  
E. M. M. M. M.